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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/630,193	07/29/2003	Teruhiko Fujiwara	02022D/HG	9238

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EXAMINER	
POKER, JENNIFER A	

ART UNIT	PAPER NUMBER
2832	

DATE MAILED: 12/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/630,193	FUJIWARA ET AL.	
	Examin r	Art Unit	
	Jennifer A. Poker	2832	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *07/29/2003* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

General Status

1. This is a first action on the merits of application filed on July 29, 2003. Claims 1-4 are pending and are being examined.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

4. Claims 1, 2, and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, the applicant states, "...having a particle size of 150 micrometers or less." It was not clear as to whether the applicant was describing the size of the insulator particles or the magnetic powder particles. The examiner understood that it was to describe the size of the magnetic powder particles. Prior art was applied accordingly.

Regarding claim 2, examiner understood that all conditions were met under applied magnetic field of 12,000 A/m, 20 kHz, and .1T

Regarding claim 4, applicant claims, "...a winding wound around said powder core." It was unclear if this winding is the same as the winding previously claimed in claim 1 or if it is an additional winding. Based on the language of the claim, Examiner understood it to be the same winding. Prior art was applied accordingly.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 4,956,011 to Nishida, et al, in view of Japanese Patent Number 63-291,859 to Horinouchi, et al, further in view of U.S. Patent Number 4,272,749 to Tuji.

Nishida, et al, discloses a powder magnetic core comprising:

(1) A 2-12% of silicon; (Abstract)

(2) A 0.05-0.95% of oxygen; (Abstract)

(3) A balance being essentially iron; (Abstract)

(4) An average diameter of the alloy powder being 10-100 micrometers. (Abstract)

Each of these ranges fall within the ranges as claimed by the applicant.

Additionally, Nishida, et al, states that it has been known in the art to incorporate inter-particle insulation, such that the powder particles are insulated by epoxy resin or sodium silicate to-avoid direct contact between powder particles and decrease eddy current losses in the high-frequency region. (Column 1, lines 36-44) (Column 3, lines 6-7)

Nishida, et al, discloses the claimed invention except for the composition of the insulation layer comprising SiO_2 and MgO.

Horinouchi, et al, discloses a core material, having excellent thermal conductivity, electrical insulating properties and dimensional accuracy, by blending alumina powder with a flux consisting of CaO, **MgO** and **SiO**.

Nishida, et al, in view of Horinouchi, et al, discloses the claimed invention except for the core's incorporation into a reactor.

Tuji discloses a reactor formed by winding a conductor on a core, which is formed by using mutually insulated particles of iron powder to provide a closed magnetic path.

One skilled in the art, at the time the invention was made, would have found it obvious to combine the teachings of Nishida, et al, Horinouchi, et al, and Tuji, and incorporate into a powder core an inter-particle insulation comprising MgO and SiO for the purpose of providing excellent thermal conductivity and electrical insulation properties and to further utilize the powder core in a reactor in order to obtain have high permeability and low losses.

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 4,956,011 to Nishida, et al, in view of Japanese Patent Number 63-291,859 to Horinouchi, et al, further in view of U.S. Patent Number 4,272,749 to Tuji, as applied to claim 1 above and further in view of U.S. Patent Number 4,637,843 to Takayama, et al.

Nishida, et al, in view of Horinouchi, et al, further in view of Tuji discloses the claimed invention except for a gap in the core.

Takayama, et al, discloses a core, which may comprise at least one cut air gap in the magnetic path. Usually, this gap is from 0.001 to 0.05 times the length of the magnetic path. Usually, the at least one cut air gap is filled with a spacer made of, for example, polyethylene terephthalate. (Column 17, lines 1-14)

One skilled in the art, at the time the invention was made, would have found it obvious to combine the teachings of Nishida, et al, Horinouchi, et al, Tuji, and Takayama, et al, and incorporate a gap or a spacer within the core in order to prevent magnetic saturation of d.c. current.

Allowable Subject Matter

7. Claim 2 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: no prior art of reference or combination thereof teaches or suggests a powder core having an a.c. permeability of at least 20 under applied d.c. magnetic field of 12,000 A/m AND a core loss of 1,000 kW/m^3 under 20kHz and .1T.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Poker whose telephone number is 703-305-4037. The examiner can normally be reached on 5:30-4:00 Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin G. Enad can be reached on 703-308-7619. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.

Jap
November 26, 2003

ANH MAI
PRIMARY EXAMINER